WHAT IS CLAIMED IS:

1.   A data transfer apparatus for transferring a packet based on transfer information corresponding to one of a plurality of entries set in a packet search table in advance, comprising:

5   a plurality of registration tables for having said transfer information registered by objectives;

     an address table for having an address of each of said plurality of registration tables registered; and

     search means for obtaining said address from said address table corresponding to a matching entry of said plurality of entries, and obtaining transfer information on each of said plurality of registration tables based on that address.

2.   The data transfer apparatus according to claim 1, wherein said plurality of entries are classified into a plurality of types.

3.   The data transfer apparatus according to claim 2, wherein said plurality of entries are classified at least into fixed entries that are fixedly set on initialization of a system and variable entries that are comprised of either the entries to be set or deleted during operation of said system or the entries to be dynamically set or deleted by a routing protocol.

4.   The data transfer apparatus according to claim 2, further comprising search entries wherein said plurality of entries are

classified into said plurality of types so as to execute a search process for said search entries independently by functions.

5.   The data transfer apparatus according to claim 4, wherein said search means has its functions classified, to be performed independently, into a packet account only for counting up counters used for collecting of packet statistical information, a packet filter used for determining whether the packet is acceptable or unacceptable, and a QoS assurance flow search for obtaining information on QoS (Quality of Service) transfer.

6.   The data transfer apparatus according to claim 2, wherein transfer information obtained as a result of a search of said search means is divided by objectives.

7.   The data transfer apparatus according to claim 1, wherein said search means executes a search process on receipt of said packet a plurality of times.

8.   The data transfer apparatus according to claim 7, wherein said search means executes the search process on receipt of said packet according to the set number of said plurality of entries.

9.   The data transfer apparatus according to claim 1,

wherein the transfer information obtained as a result of a search of said search means is shared by indirect referencing by said address.

10. A transfer information management method of a data transfer apparatus for transferring a packet based on transfer information corresponding to one of a plurality of entries set in a packet search table in advance,

wherein management is conducted by:

registering said transfer information in a plurality of registration tables by objectives; and

registering an address of each of said plurality of registration tables in an address table so as to obtain the transfer information on each of said plurality of registration tables based on the address of said address table corresponding to a matching entry of said plurality of entries.

11. The transfer information management method according to claim 10,

wherein said plurality of entries are managed by classifying them into a plurality of types.

12. The transfer information management method according to claim 11,

wherein said plurality of entries are classified at least into fixed entries that are fixedly set on initialization of a system and variable entries that are comprised of either the entries to be set or deleted during operation of said system

or the entries to be dynamically set or deleted by a routing protocol.

13. The transfer information management method according to claim 11,

5   wherein transfer information obtained as a result of a search is managed by dividing it by objectives.

14. The transfer information management method according to claim 10,

     wherein the transfer information obtained as a result of

10 a search is managed by sharing it by indirect referencing by said address.

15. A transfer information search method of a data transfer apparatus for transferring a packet based on transfer information corresponding to one of a plurality of entries set in a packet

15 search table in advance, comprising the steps of:

     obtaining an address corresponding to a matching entry of said plurality of entries from an address table for having an address of each of a plurality of registration tables with said transfer information registered by objectives; and

20   obtaining the transfer information on each of said plurality of registration tables based on that address.

16. The transfer information search method according to claim 15,

wherein said plurality of entries are classified into a plurality of types.

17. The transfer information search method according to claim 16,

wherein said plurality of entries are classified at least into fixed entries that are fixedly set on initialization of a system and variable entries that are comprised of either the entries to be set or deleted during operation of said system or the entries to be dynamically set or deleted by a routing protocol.

18. The transfer information search method according to claim 16,

wherein transfer information obtained in said step of obtaining the transfer information is divided by objectives.

19. The transfer information search method according to claim 15,

wherein the search process on receipt of said packet is executed a plurality of times in said step of obtaining the address corresponding to the entry.

20. The transfer information search method according to claim 19,

wherein the search process on receipt of said packet is executed according to the set number of said plurality of entries in said step of obtaining the address corresponding to the entry.

21.   The transfer information search method according to claim 19,

wherein a search process is executed independently, divided by functions in said step of obtaining the transfer information.

5   22.   The transfer information search method according to claim 21, further comprising search entries wherein said plurality of entries are classified into said plurality of types so as to execute a search process for said search entries independently, divided by functions.

10   23.   The transfer information search method according to claim 22,

wherein, in said step of obtaining the address corresponding to the entry, said search process has its functions classified, to be performed independently, into a packet account only for
15   counting up counters used for collecting packet statistical information, a packet filter used for determining whether the packet is acceptable or unacceptable, and a QoS assurance flow search for obtaining information on QoS (Quality of Service) transfer.

20   24.   The transfer information search method according to claim 15,

wherein the transfer information obtained in said step of obtaining the transfer information is shared by indirect referencing by said address.